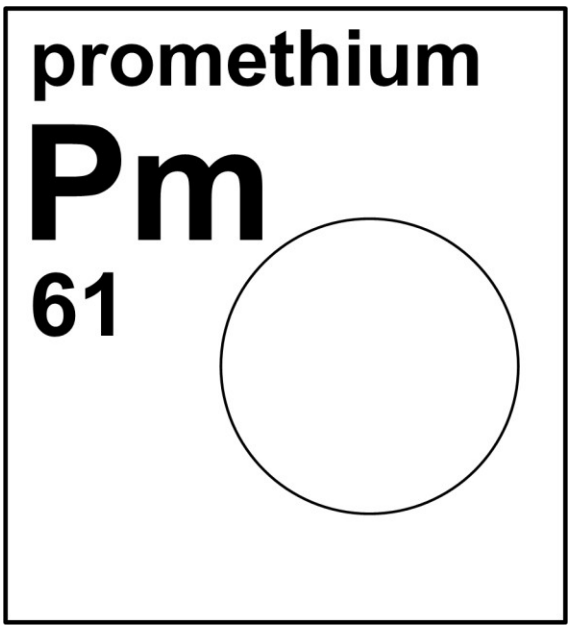
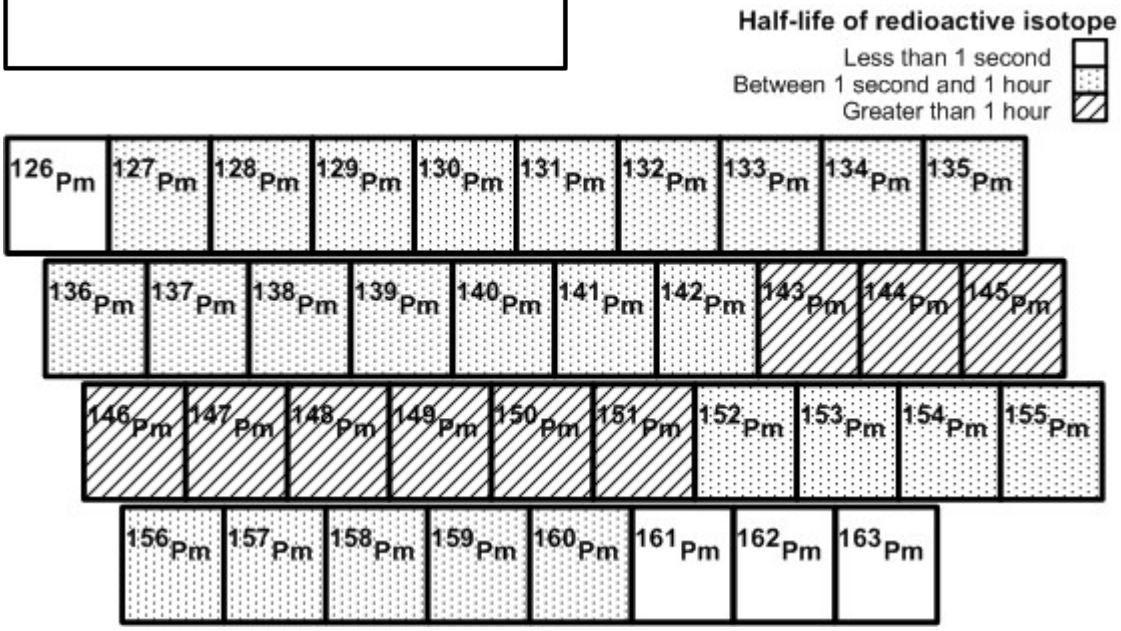
promethium



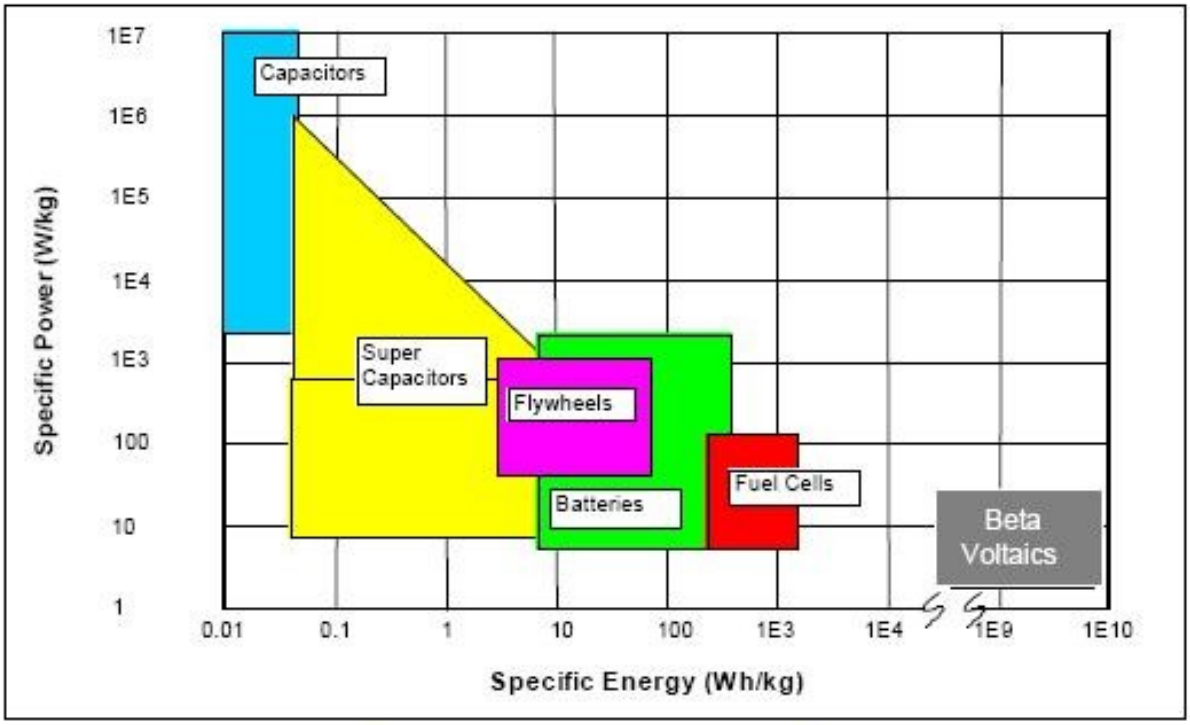
Stable isotope	Atomic mass	Mole fraction
(none)		



Important applications of stable and/or radioactive isotopes

Isotopes in industry

1) The high beta particle flux density (beta decay of radioactive elements) in ^{147}Pm makes this radioisotope an ideal candidate for nuclear batteries (betavoltaics). Long-lived power supplies for remote and even hostile environmental conditions are needed for space and sea missions. Nuclear batteries can uniquely serve this role. A nuclear battery using betavoltaics can have an energy density near a thousand watt-hours per kilogram with 21% efficiency, which is much greater than the best chemical battery. Moreover, radioactive isotopes are available on the market for reasonable prices.



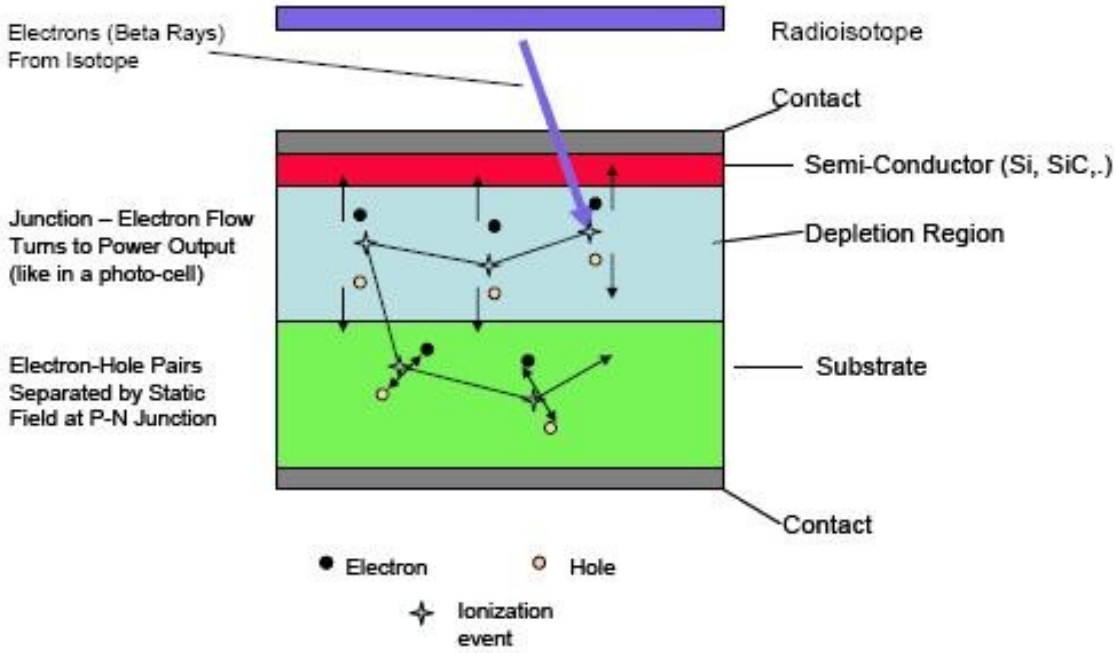


Figure 1: Example of the principle of using beta emitting radionuclide's like ^{147}Pm to efficiently produce power; betavoltaics.